



1638

#12/IDS  
BP 1/2/03

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Roberto A. Gaxiola, Gerald R. Fink and Seth L. Alper

Application No.: 09/834,998

Group Art Unit: 1638

Filed: April 13, 2001

Examiner:

Not Yet Assigned

Collins

Title: Proton Transporters and Uses in Plants

CERTIFICATE OF MAILING	
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to Assistant Commissioner for Patents, P.O. Box 2327, Arlington, VA 22202	
on 08/26/02	<i>Seth L. Alper</i>
Date	Signature
<i>Ethan T. Smith</i>	
Typed or printed name of person signing certificate	

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INFORMATION DISCLOSURE STATEMENT

Assistant Commissioner for Patents  
P.O. Box 2327  
Arlington, VA 22202

Sir:

This Information Disclosure Statement is submitted:

☐ under 37 CFR 1.129(a), or

(First/Second submission after Final Rejection)

☒ under 37 CFR 1.97(b), or

(Within any one of the following time periods: three months of filing national application (other than a CPA) or date of entry of the national stage in an international application; or before the mailing date of a first office action on the merits in a non-provisional application, including a CPA, or a Request for Continued Examination).

☐ under 37 CFR 1.97(c) together with either:

☐ a Statement under 37 CFR 1.97(e), as checked below, or

☐ a \$180.00 fee under 37 CFR 1.17(p), or

(After the 37 CFR 1.97(b) time period, but before final action or notice of allowance, whichever occurs first)

☐ under 37 CFR 1.97(d) together with:

☐ a Statement under 37 CFR 1.97(e), as checked below, and

☐ a \$180.00 fee under 37 CFR 1.17(p), or

(Filed after final action or notice of allowance, whichever occurs first, but on or before payment of the issue fee)

☐ under 37 CFR 1.97(i):

Applicant requests that the IDS and cited reference(s) be placed in the application filewrapper.

(Filed after payment of issue fee)

Statement Under 37 CFR 1.97(e)

- ☐ Each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement; or
- ☐ No item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned, after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of this Information Disclosure Statement.

Statement Under 37 CFR 1.704(d) (Patent Term Adjustment)

Applies to original applications (other than design) filed on or after May 29, 2000

- ☐ Each item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart application and this communication was not received by any individual designated in § 1.56(c) more than thirty days prior to the filing of the Information Disclosure Statement.
- ☒ Enclosed herewith is form PTO-1449:
- ☒ Copies of the cited references are enclosed (AR-AZ, AR2-AZ2, AR3-AZ3, AR4 & AS4).
- ☐ Copies of cited references are enclosed except those entered in prior application, U.S. Application No. [ ], to which priority under 35 U.S.C. 120 is claimed. [The earlier application contains copies of the cited references.]
- ☐ The listed references were cited in the enclosed International Search Report in a counterpart foreign application.
- ☐ The "concise explanation" requirement (non-English references) for reference(s) [ ] under 37 CFR 1.98(a)(3) is satisfied by:
- ☐ the explanation provided on the attached sheet.
  - ☐ the explanation provided in the Specification.
  - ☐ submission of the enclosed International Search Report.
  - ☐ submission of the enclosed English-language version of a foreign Search Report and/or foreign Office Action.
  - ☐ the enclosed English language abstract.

☐ Applicant requests that the following non-published pending applications be considered:

Examiner's  
Initials

\_\_\_\_\_ U.S. Patent Application No. [ ], by [inventor(s)], filed [ ], Docket No.: [ ]

\_\_\_\_\_ U.S. Patent Application No. [ ], by [inventor(s)], filed [ ], Docket No.: [ ]

\_\_\_\_\_ U.S. Patent Application No. [ ], by [inventor(s)], filed [ ], Docket No.: [ ]

\_\_\_\_\_  
Examiner

\_\_\_\_\_  
Date

☐ A copy of each above-cited application, including the current claims, is enclosed.

☐ A copy of each above-cited application, including the current claims, is enclosed, except those entered in prior application, U.S. Application No. [ ], to which priority under 35 U.S.C. 120 is claimed.

The Examiner is requested to return a copy of the above list of pending applications indicating which references were considered with the next office communication.

It is requested that the information disclosed herein be made of record in this application.

Method of payment:

☐ A check for the fee noted above is enclosed, or the fee has been included in the check with the accompanying Reply. A copy of this Statement is enclosed.

☐ Please charge Deposit Account 08-0380 in the amount of \$[ ]. A copy of this Statement is enclosed.

☒ Please charge any deficiency in fees and credit any overpayment to Deposit Account 08-0380.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

By

Anne J. Collins

Registration No.: 40,864

Telephone: (978) 341-0036

Facsimile: (978) 341-0136

Concord, MA 01742-9133

Dated: August 26, 1994

P 1449 REPRODUCED

ATTORNEY DOCKET NO.  
0399.2004-002

APPLICATION NO.  
09/834,998

INFORMATION DISCLOSURE CITATION  
IN AN APPLICATION

August 26, 2002

(several sheets if necessary)

APPLICANT  
Roberto A. Gaxiola, et al.

FILING DATE  
April 13, 2001

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U.S. PATENT DOCUMENTS

EXAM INER INI- TIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB- CLASS	FILING DATE IF APPROPRIATE
	AA						
	AB						
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						
	AJ						
	AK						

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION YES NO
	AL						
	AM						
	AN						
	AO						
	AP						
	AQ						

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

AR	Apse, M.P., et al., "Salt Tolerance Conferred by Overexpression of a Vacuolar Na <sup>+</sup> /H <sup>+</sup> Antiport in Arabidopsis," <i>Science</i> 285: 1256-1258 (20 August 1999).
AS	Gaxiola, R., et al., "A Novel and Conserved Salt-Induced Protein is an Important Determinant of Salt Tolerance in Yeast," <i>EMBO J.</i> 11(9):3157-3164 (September 1992).
AT	Gaxiola, R.A., et al., "The Yeast CLC Chloride Channel Functions in Cation Homeostasis," <i>Proc. Natl. Acad. Sci. USA</i> 95(7):4046-4050 (March 1998)

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## U.S. PATENT DOCUMENTS

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## FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION YES NO

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

AU	Gaxiola, R.A., et al., "The Arabidopsis thaliana Proton Transporters, AtNhx1 and Avp1, Can Function in Cation Detoxification in Yeast," <i>Proc. Natl. Acad. Sci. USA</i> 96:1480-1485 (February 1999).
AV	Hechenberger, M., et al., "A Family of Putative Chloride Channels from Arabidopsis and Functional Complementation of a Yeast with a CLC Gene Disruption," <i>J. Biol. Chem.</i> 271(52):33632-33638 (December 27, 1996).
AW	Nass, R., et al., "Novel Localization of a Na <sup>+</sup> /H <sup>+</sup> Exchanger in a Late Endosomal Compartment of Yeast," <i>J. Biol. Chem.</i> 273(33):21054-21060 (August 14, 1998).
AX	Sato, M.H., et al., "The AtVAM3 Encodes a Syntaxin-Related Molecule Implicated in the Vacuolar Assembly in Arabidopsis thaliana," <i>J. Biol. Chem.</i> 272(39):24530-24535 (September 26, 1997).
AY	Stitt, M., "Pyrophosphate as an Energy Donor in the Cytosol of Plant Cells: an Enigmatic Alternative to ATP," <i>Bot. Acta</i> 111:167-175 (1998).
AZ	Xie, X.S., et al., "Isolation and Reconstruction of the Chloride Transporter of Clathrin-Coated Vesicles," <i>J. Biol. Chem.</i> 264(32):18870-18873 (November 1989).
AR2	Topfer, R., et al., "A Set of Plant Expression Vectors for Transcriptional and Translational Fusions," <i>Nucleic Acid Res.</i> 15(14):5890 (July 24, 1987).
AS2	Zhen, R.G., et al., "Acidic Residues Necessary for Pyrophosphate-Energized Pumping and Inhibition of the Vacuolar H <sup>+</sup> -pyrophosphatase by N,N'-Dicyclohexylcarbodiimide," <i>J. Biol. Chem.</i> 272(35):22340-22348 (August 29, 1997).

EXAMINER

DATE CONSIDERED

PTO 1449 REPRODUCED		ATTORNEY DOCKET NO. 0399.2004-002		APPLICATION NO. 09/834,998		
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	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION YES      NO
<b>OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)</b>						
	AT2	Ballesteros, E., et al., "Na <sup>+</sup> /H <sup>+</sup> antiport activity in tonoplast vesicles isolated from sunflower roots induced by NaCl stress," <i>Physiol. Plant.</i> , 99:328-334 (1997).				
	AU2	Gibeaut, D.M., et al., "Maximal Biomass of <i>Arabidopsis thaliana</i> Using a Simple, Low-Maintenance Hydroponic Method and Favorable Environmental Conditions," <i>Plant Physiol.</i> 115:317-319 (1997).				
	AV2	Kim, Y., et al., "Isolation and Characterization of cDNAs Encoding the Vacuolar H <sup>+</sup> -Pyrophosphatase of <i>Beta vulgaris</i> ," <i>Plant Physiol.</i> , 106:375-382 (1994).				
	AW2	Kirsch, M., et al., "Salt stress induces an increased expression of V-type H <sup>+</sup> -ATPase in mature sugar beet leaves," <i>Plant Mol. Biol.</i> , 32:543-547 (1996).				
	AX2	Neuhaus, J-M, and Rogers, J.C., "Sorting of proteins to vacuoles in plant cells," <i>Plant Mol. Biol.</i> , 38:127-144 (1998).				
	AY2	Paris, N., et al., "Molecular Cloning and Further Characterization of a Probable Plant Vacuolar Sorting Receptor," <i>Plant Physiol.</i> , 115:29-39 (1997).				
	AZ2	Serrano, R., and Gaxiola, R., "Microbial Models and Salt Stress Tolerance in Plants," <i>Critical Reviews in Plant Sciences</i> , 13(2):121-138 (1994).				
	AR3	Stitt, M., "Pyrophosphate as an Energy Donor in the Cytosol of Plant Cells: an Enigmatic Alternative to ATP," <i>Bot. Acta.</i> 111:167-175 (1998).				
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		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION YES NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
	AS3	Tsiantis, M.S., et al., "Salt regulation of transcript levels for the c subunit of a leaf vacuolar H <sup>+</sup> -ATPase in the halphyte <i>Mesembryanthemum crystallinum</i> ," <i>The Plant Journal</i> , 9(5):729-736 (1996).					
	AT3	Vitale, A., and Raikhel, N.V., "What do proteins need to reach different vacuoles?," <i>Trends in Plant Science</i> , 4:148-154 (1999).					
	AU3	Zhen, R.G., et al., "Acidic Residues Necessary for Pyrophosphate-energized Pumping and Inhibition of the Vacuolar H <sup>+</sup> -pyrophosphatase by N,N' -Dicyclohexylcarbodiimide," <i>J. of Biol. Chem.</i> , 272(35):22340-22348 (1997).					
	AV3	Safafian, V., et al., "Molecular cloning and sequence of cDNA encoding the pyrophosphate-energized vacuolar membrane proton pump of <i>Arabidopsis thaliana</i> ," <i>Proc. Natl. Acad. Sci. USA</i> , 89:1775-1779 (1992).					
	AW3	Lerchl, J., et al., "Molecular cloning, characterization and expression analysis of isoforms encoding tonoplast-bound proton-translocating inorganic pyrophosphatase in tobacco," <i>Plant Mol. Biol.</i> , 29:833-840 (1995).					
	AX3	Kim, E.J., et al., "Heterologous expression of plant vacuolar pyrophosphatase in yeast demonstrates sufficiency of the substrate-binding subunit for proton transport," <i>Proc. Natl. Acad. Sci. USA</i> , 91:6128-6132 (1994).					
	AY3	Schwappach, B., et al., "Golgi Localization and Functionally Important Domains in the NH <sub>2</sub> and COOH Terminus of the Yeast CLC Putative Chloride Channel Geflp," <i>J. of Biol. Chem.</i> , 273(24):15110-15118 (1996).					
	AZ3	Hong, B., et al., "Identification of a Calmodulin-Regulated Ca <sup>2+</sup> -ATPase in Endoplasmic Reticulum," <i>Plant Physiology</i> , 119:1165-1175 (1999).					
	AR4	Burbidge, A., et al., "Structure and expression of a cDNA encoding a putative neoxanthin cleavage enzyme (NCE), isolated from a wilt-related tomato ( <i>Lycopersicon esculentum</i> Mill.) Library," <i>J. of Exp. Botany</i> , 47(317):2111-2112 (1997).					
	AS4	Al-Awqati, Q., "Chloride channels of intracellular organelles," <i>Current Opinion in Cell Biology</i> 1995, 7:504-508.					
EXAMINER				DATE CONSIDERED			